

# Unarticulated Constituents

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## *Abstract*

In a recent paper (*Linguistics and Philosophy* 23:4, June 2000), Jason Stanley argues that there are no 'unarticulated constituents', contrary to what advocates of Truth-conditional pragmatics (TCP) have claimed. All truth-conditional effects of context can be traced to logical form, he says. In this paper I maintain that there *are* unarticulated constituents, and I defend TCP. Stanley's argument exploits the fact that the alleged unarticulated constituents can be 'bound', that is, they can be made to vary with the values introduced by operators in the sentence. I show that Stanley's argument rests on a fallacy, and I provide alternative analyses of the data.

## 1. INTRODUCTION

### 1.1. SATURATION AND FREE ENRICHMENT

According to a widespread view, context comes into play in truth-conditional interpretation only to help determine the denotation of indexicals and other context-sensitive expressions. Such expressions are like free variables to which a semantic value must be contextually assigned. In some cases the contextual assignment is automatic and rule-governed. Thus the reference of 'I' is determined automatically on the basis of a linguistic rule, without taking the speaker's beliefs and intentions into consideration. In other cases the denotation of a context-sensitive expression is determined on a pragmatic basis. For example, a possessive phrase such as 'John's car' arguably means something like *the car that bears relation R to John*. The free variable 'R' must be contextually assigned a particular value; but that value is not determined by a rule. What a given occurrence of the phrase 'John's car' means ultimately depends upon what the speaker who utters it means. That dependence upon speaker's meaning is a characteristic feature of 'semantically underdetermined' expressions, which are

pervasive in natural language.

I call ‘saturation’ the contextual assignment of semantic value to a context-sensitive expression, whether that assignment is fully pragmatic or governed by a linguistic rule. Everybody agrees that, owing to the context-sensitivity of natural language sentences, some such process must take place in order to fix truth-conditions. Much more controversial is the claim, made by some theorists, that another, very different type of contextual process is also involved in truth-conditional interpretation. While saturation is a ‘bottom-up’ process, i.e. a process triggered (and made *obligatory*) by a linguistic expression in the sentence itself, the other type of contextual process is not bottom-up, but ‘top-down’. Far from being mandated by an expression in the sentence, it takes place for purely pragmatic reasons.

To give a standard example, suppose someone asks me, at about lunch time, whether I am hungry. I reply:

(1) I’ve had a very large breakfast.

In this context, my utterance conversationally implicates that I am not hungry. In order to retrieve the implicature, the interpreter must first understand what is stated — the input to the inferential process responsible for implicature generation. That input is the proposition that the speaker has had a very large breakfast... when? No time is specified in the sentence, which merely describes the posited event as past. On the other hand, the implicature that the speaker is not hungry could not be derived if the said breakfast was not understood as having taken place on the day of utterance. Here we arguably have a case where something (the temporal location of the breakfast event on the day of utterance) is part of the intuitive truth-conditions of the utterance yet does not correspond to anything in the sentence itself.<sup>1</sup> If this is right, then the temporal location of the breakfast event is an *unarticulated constituent* of the statement made by uttering

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<sup>1</sup> That analysis, which comes from Sperber and Wilson 1986:189-190, is not the only possible one. In Recanati 1993, pp. 257-258, I suggest a alternative treatment of that example in terms of saturation.

the sentence in that context.

Such unarticulated constituents, which are part of the statement made even though they correspond to nothing in the uttered sentence, arguably result from a pragmatic process of *free enrichment* — ‘free’ in the sense of not being linguistically controlled. What triggers the contextual provision of the relevant temporal specification in example (1) is not something in the sentence but simply the fact that the utterance is meant as an answer to a question about the speaker’s present state of hunger (which state can be causally affected only by a breakfast taken on the same day).

The prototypical example of an utterance whose interpretation involves an unarticulated constituent is the sentence ‘It is raining’, used to talk about a particular place (typically, the place of utterance). It is in connection with that example that the phrase ‘unarticulated constituent’ was first introduced (Perry 1993: 206). In contrast to the time of utterance, which is (indexically) articulated in the sentence via the present tense, the place of utterance is an unarticulated constituent of the proposition which the utterance expresses, Perry argues. The speaker could have said ‘It’s raining here’. If she had said so, the place would be (indexically) articulated. But in ‘It’s raining’, there is nothing in the sentence that stands for a place. Still we understand the utterance as saying something about a particular place and as true iff it is raining *at that place*.

The pragmatics literature is full of similar examples. Let me mention one that has become a classic:

(2) Mary took out her key and opened the door

In virtue of a ‘bridging inference’, we naturally understand the second conjunct as meaning that Mary opened the door with the key mentioned in the first conjunct ; yet this is not explicitly articulated in the sentence. Insofar as the bridging inference affects

the intuitive truth-conditions of the utterance, it does so as a result of free enrichment.<sup>2</sup> The same thing can be said about Kent Bach's example where a mother says (3) to her child who cries because of a minor cut :

(3) You're not going to die

This is interpreted in context as : *You're not going to die from that cut*. The restriction 'from that cut' results from free enrichment. The sentence itself conveys no such thing – it simply says that the child is not going to die.

A last example comes not from the pragmatics literature, but from John Searle's related work on what he calls the 'background'. According to Searle, there are many things that we take for granted both in speaking and in interpreting the utterances of others. Among those things we take for granted, some are articulated in the sentence itself: they are the 'presuppositions' of the sentence. Thus if I say that John has stopped smoking, I (must) presuppose that he smoked before, in virtue of the appropriateness conditions of the verb 'to stop'. But there are also things we take for granted which are in no way articulated in the sentence itself. Searle calls them 'background assumptions'. For example,

Suppose I go into the restaurant and order a meal. Suppose I say, speaking literally, 'Bring me a steak with fried potatoes.' (...) I take it for granted that they will not deliver the meal to my house, or to my place of work. I take it for granted that the steak will not be encased in concrete, or petrified. It will not be stuffed into my pockets or spread over my head. But none of these assumptions was made explicit in the literal utterance. (Searle 1992: 180)

Though unarticulated, those assumptions contribute to determining the intuitive conditions of satisfaction (obedience-conditions, truth-conditions, etc.) of the utterance.

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<sup>2</sup> The term 'bridging inference' was originally introduced by Herb Clark, a pioneer of pragmatic studies, in the seventies (see Clark and Haviland 1974 and 1977). Example (2) is discussed in Carston (1988).

The order ‘Bring me a steak with fried potatoes’ does not count as satisfied if the steak is delivered, encased in concrete, to the customer’s house. It is mutually manifest to both the hearer and the speaker that the speaker intends the ordered meal to be placed in front of him on the restaurant table he is sitting at, etc. Though not explicitly said, that is clearly part of what is meant. Yet one does not want to say that that aspect of utterance meaning is conveyed indirectly or nonliterally (as when one says something and means something else). The utterance ‘Bring me a steak with fried potatoes’ is fully literal. It is a property of literal and serious utterances that their conditions of satisfaction systematically depend upon unstated background assumptions.

According to the view we arrive at (and in contrast to the ‘widespread view’ we started with) various contextual processes come into play in the determination of an utterance’s intuitive truth-conditions; not merely saturation — the contextual assignment of values to indexicals and free variables in the logical form of the sentence — but also free enrichment and other processes which are not linguistically triggered but are pragmatic through and through. That view I will henceforth refer to as ‘Truth-conditional pragmatics’ (TCP).

## 1.2. THE ARGUMENT FROM BINDING

Many theorists think one should *not* allow top-down processes, which are pragmatic through and through, to affect the proposition expressed by an utterance. In order to be part of what is literally said, they claim, a contextually provided constituent must at least *correspond to* something in the sentence. It must be ‘articulated’. This constraint is what, in previous writings, I referred to as (Pragmatic) Minimalism.<sup>3</sup>

### *Minimalism*

What is said is affected by the bottom-up process of saturation but not by top-down processes such as free enrichment.

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<sup>3</sup> According to Minimalism, « a pragmatically determined aspect of meaning is part of what is said if and only if its contextual determination is triggered by the grammar, that is, if the sentence itself sets up a slot to be contextually filled » (Recanati 1993: 240).

If one accepts Minimalism, one will say that the aspects of utterance meaning which result from free enrichment do not belong to what is strictly and literally said, but either are ‘conversational implicatures’ or (if one wants to restrict the term ‘conversational implicatures’ to things that are intuitively ‘implied by’ the utterance) belong to an area of meaning intermediate between what is said and the conversational implicatures. Bach calls the things in that area the ‘implicitures’ of the utterance (Bach 1994b).

Though TCP seems incompatible with Minimalism, it is not really. Two different notions of ‘what is said’ are obviously in play, and to that extent, the quarrel is verbal rather than substantive. If the notion of ‘what is said’ we are trying to characterize is meant to capture the *intuitive* truth-conditions of an utterance, then it must be acknowledged that what is said, in that sense, incorporates unarticulated constituents and other ‘implicitures’. That is what the advocate of Truth-conditional pragmatics urges. But this does not prevent the semanticist from defining *another* notion of what is said, conforming to Minimalism. Let ‘what is said<sub>min</sub>’ be the proposition expressed by an utterance when the effects of top-down pragmatic processes such as free enrichment have been discounted, in accordance with Minimalism; and let ‘what is said<sub>int</sub>’ correspond to the intuitive truth-conditions of the utterance, which may well result from the operation of such processes. Both what is said<sub>min</sub> and what is said<sub>int</sub> are influenced by pragmatic factors, but not to the same extent. If I am right what is said<sub>int</sub> is affected by top-down processes such as free enrichment, whereas the only pragmatic processes that are allowed to affect what is said<sub>min</sub> are those that are triggered by something in the sentence itself. On this view (which I called the ‘syncretic view’ in Recanati 2001) *what is strictly and literally said* by (1) would be true if the speaker had had a large breakfast only once, twenty years ago. But what the speaker of (1) *actually states* is quite different : it is true iff the speaker has had a large breakfast on the day of utterance.

Even though TCP and Minimalism turn out to be compatible, there are radical

versions of both which cannot be so easily reconciled. On the side of TCP, there is Contextualism. Contextualism denies that there is a level of meaning that is both (i) truth-evaluable, and (ii) unaffected by top-down factors. John Searle, whom I mentioned earlier in connection with TCP, holds such a view. (Another leading advocate of Contextualism is Charles Travis.) On the side of Minimalism, there is a strong version which is incompatible with TCP. On that version, which I call ‘I-Minimalism’ (Recanati forthcoming), even the *intuitive* truth-conditions of our utterances obey the Minimalist constraint:

*I-Minimalism*

What is said<sub>int</sub> is affected by the bottom-up process of saturation but not by top-down processes such as free enrichment.

Examples such as those I gave in section 1.1 are supposed to provide empirical evidence that I-Minimalism is mistaken. Even if ‘what is strictly and literally said’ is minimal by definition, the intuitive truth-conditional content of the utterance is affected by top-down factors and incorporates unarticulated constituents. That seems obvious when one looks at the data. Yet there is at least one author who denies that that is so, and defends I-Minimalism.

In a recent paper, Jason Stanley claims that « for each alleged example of an unarticulated constituent [mentioned in the literature], there is an unpronounced pronominal element in the logical form of the sentence uttered, whose value is the alleged unarticulated constituent » (Stanley 2000 : 410). Though unarticulated at the level of surface syntax, the alleged unarticulated constituents turn out to be articulated at a deeper level of syntactic analysis. It follows that « we have been given no reason to abandon the thesis that the only truth-conditional role of context is the resolution of indexicality, broadly construed » (Stanley 2000 : 401). As against TCP, Stanley therefore maintains that « all effects of extra-linguistic context on the truth-conditions of an assertion are traceable to elements in the actual syntactic structure of the sentence uttered » (Stanley 2000: 391). The truth-conditions Stanley talk about here are the

intuitive truth-conditions of the utterance.<sup>4</sup> Stanley's defense of Minimalism is therefore strikingly unlike the usual defense. The usual defense of Minimalism against TCP consists in arguing that a decent semanticist should be concerned not with 'what is said' in the intuitive sense (what is said<sub>int</sub>), but with something more abstract, which satisfies the Minimalist constraint by definition but need not surface to consciousness (what is said<sub>min</sub>). That is not Stanley's stance. Like the truth-conditional pragmatist, he is concerned with what is said<sub>int</sub>. Yet he contends that what is said, in that sense, conforms to Minimalism as a matter of empirical fact, while the truth-conditional pragmatist contends, also on empirical grounds, that it does not conform to Minimalism. The disagreement here is a genuine empirical disagreement, not a verbal dispute about the proper understanding of the phrase 'what is said'.

Stanley's denial that there are unarticulated constituents is supported by the following argument :

Since the supposed unarticulated constituent... is not the value of anything in the sentence uttered, there should be no reading of the relevant linguistic constructions in which the unarticulated constituent varies with the values introduced by operators in the sentence uttered. Operators in a sentence only interact with variables in the sentence that lie within their scope. But, if the constituent is unarticulated, it is not the value of any variable in the sentence. Thus, its interpretation cannot be controlled by operators in the sentence. (Stanley 2000: 410-411)

Stanley then uses data of the sort originally collected by Barbara Partee (1989) to show that, whenever an alleged unarticulated constituent has been postulated to account for the intuitive meaning of an utterance, one can intuitively 'bind' the alleged

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<sup>4</sup> Semantic interpretation, Stanley says, « involves assigning denotations to the constituents of the logical form, and combining them in accord with composition rules... What results... is what is expressed by the assertion... If the process is successful, *the proposition it yields is one the interpreter would recognize as the proposition expressed by that assertion.* » (Stanley forthcoming, italics mine). This is reminiscent of my 'Availability Principle' (Recanati 1993, 2001), which Stanley seems to endorse. Further evidence is provided by the passage from Stanley and Szabo 2000 quoted at the end of this paper (§4.4).



unarticulated constituent, i.e. make it vary according to the values introduced by some operator. For instance, the temporal location of the breakfast event, which was said to be an unarticulated constituent of the speaker's response in example (1), can be bound by a quantifier.<sup>5</sup> We can say:

(4) No luck. Each time you offer me lunch, I've had a very large breakfast.

The temporal location of the breakfast event now systematically varies with the temporal values introduced by 'each time you offer me lunch'. It follows (according to the argument) that the alleged unarticulated constituent in the original example was not really unarticulated: it had to be the (contextual) value of a variable in the logical form of the sentence, since without a variable there could not be the sort of binding that occurs in (4).

### 1.3. VARIETIES OF UNARTICULATED CONSTITUENT

Before proceeding, we must draw a couple of distinctions between various sorts of alleged 'unarticulated constituents' that have been mentioned in the literature.

First, there is an important distinction between the metaphysical variety and the communicational variety. An unarticulated constituent belongs to the communicational variety to the extent that it is part of the interpretation of an utterance and, as such, is 'available' to whoever fully understands the utterance. This feature is best appreciated by contrast to the other sort of unarticulated constituents — the metaphysical sort, for which no such constraint holds.

It's a metaphysical fact that every action takes place somewhere. The action of dancing is no exception. It follows that, if we say that Mary danced, we describe a state

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<sup>5</sup> Stanley does not actually discuss that example, but his general argument applies nonetheless. The examples he discusses are: 'It's raining <here>', 'Sherman is small <for a basketball player>', 'Every bottle <on the bookshelf> is green', 'David is at <his> home' and a few others. The material within angle brackets correspond to the alleged unarticulated constituents.

of affairs (Mary's dancing) which is bound to involve a place. The place is not articulated in the sentence — when we say that 'Mary danced', we do not say that she danced in place *l*, nor even that she danced somewhere. No place is articulated in the uttered sentence, yet in virtue of the fact that the sentence describes an action, a truth-maker for that sentence is bound to involve a place. The place, therefore, is a (metaphysical) unarticulated constituent of the statement that is made by an utterance of the sentence 'Mary danced'. In the same sense, one may say, with John Perry, that the relevant inertial frame is an unarticulated constituent of the statement that event A and event B were simultaneous, even though neither the speaker nor the hearer are aware of this. Or one may say that a certain time zone is an unarticulated constituent of my five-year-old daughter's statement that it is four o'clock, even though she has never heard of time zones.

For something to count as an unarticulated constituent in the *communicational* sense, it must be part and parcel of what the speaker means by his or her utterance. Thus the speaker who says 'It's raining' means that it's raining where she is (or at some other contextually given place) ; the speaker who, in the above example, says 'I've had breakfast' means that she's had breakfast on the day of utterance ; and so forth. On the hearer's side, the unarticulated constituent must be identified on pains of not arriving at a proper understanding of the utterance. To understand the speaker's utterance of 'It's raining', one must know which place is such that the speaker's utterance is true iff it's raining at that place.

As the rain example shows, something may be an unarticulated constituent both metaphysically and communicational. Like dancing, raining metaphysically requires a place to occur in. Though it is an unarticulated constituent of the statement 'Mary danced' from a metaphysical point of view, however, the place where the dancing took place is not an unarticulated constituent of the statement from the communicational point of view. One can understand 'Mary danced' without identifying a particular place as the place where, according to the speaker, the event occurred. But, as John Perry and others emphasized, one cannot understand 'It's raining' without knowing which place is

in question. The place of rain is an unarticulated constituent of the statement that it's raining both metaphysically and communicationally.

Like Stanley, I am concerned exclusively with unarticulated constituents of the communicational variety in this paper ; metaphysical matters will be touched upon only in passing, to the extent that they have a bearing on communicational issues. I will therefore consistently use the phrase 'unarticulated constituents' as an abbreviation for : unarticulated constituents from a communicational point of view. Now, within that category, there is another important distinction between two sorts of cases — a distinction that will loom large in what follows. The distinction can be framed in terms of what happens when the alleged unarticulated constituent is not actually supplied in interpreting the utterance.

In a first sort of case, most commonly discussed in the pragmatics literature, an interpreter's failure to retrieve the unarticulated constituent results in a *mismatch* : the proposition which the utterance is taken to express is not the proposition actually asserted by the speaker, but (typically) a less specific proposition. If, in interpreting utterance (1), we don't supply the unarticulated constituent (the day of utterance, to which the speaker tacitly refers), the time of the described event remains unspecified, except for the feature 'past'. The utterance is then understood as expressing the proposition that the speaker has had a very large breakfast at some (unspecified) time in the past — not necessarily on the day of utterance.<sup>6</sup> Similarly, in example (2), a failure to provide the unarticulated constituent in interpreting the utterance results in a *mismatch* : the utterance is understood as saying that Mary took out her key and opened the door in some way or other (not necessarily with the key in question). This is a less specific proposition than that which the speaker actually meant to assert. The less specific proposition which we get if we discount the unarticulated constituents is what in earlier writings I called the 'minimal' proposition expressed by the utterance. It is

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<sup>6</sup> As Sperber and Wilson point out, this is how an utterance like 'I've eaten camel' or 'I've been to Tibet' is ordinarily understood : no contextual specification of the time of the described event takes place (Sperber and Wilson 1986: 189-190).

also what most semanticists would identify as ‘what is strictly and literally said’ (what is said<sub>min</sub>).

In the other type of case, discussed by John Perry and those who have followed him, failure to provide the unarticulated constituent is said to result in *vacuity* : no proposition is expressed, if we discount the unarticulated constituent. According to Perry, that is what happens in the ‘It’s raining’ case : if we don’t supply a place, the utterance is semantically incomplete and cannot be evaluated for truth or falsity. The verb ‘to rain’, Perry says, denotes a dyadic relation — a relation between times and places. In a given place, it doesn’t just rain or not, it rains at some times while not raining at others; similarly, at a given time, it rains in some places while not raining in others. To evaluate a statement of rain as true or false, Perry says, we need both a time and a place, but the statement ‘It is raining’ explicitly gives us only the two-place relation (supplied by the verb) and the temporal argument (supplied by the present tense). The locational argument must be contextually supplied for the utterance to express a complete proposition. Similarly, faced with an utterance like

(5) They are leaving because they’ve had enough,

we must answer the question : enough of what ? before we can evaluate the utterance as true or false. An unarticulated constituent must be contextually supplied to *complete* the utterance. Unless such a constituent is provided, the utterance fails to express a definite proposition, just as it does if the pronoun ‘they’ remains contextually uninterpreted.

Let us call the first type of case (where failure to provide the constituent results in a mismatch) the ‘A-type’, and the second type of case (where failure to provide the constituent results in vacuity) the ‘B-type’. In part 2, I will attempt to show that B-type unarticulated constituents are ‘unarticulated’ only in a weak sense ; a sense which is irrelevant to the debate between TCP and I-Minimalism. Only strong (or genuine) unarticulatedness matters to that debate, I will argue. In part 3, I will refute Stanley’s argument to the effect that *all* alleged unarticulated constituents — including A-type cases — are in fact values contextually assigned to free variables in logical form.

Finally, in part 4, I will show how the complex type of example used by Stanley in support of his view can be analysed in the framework of TCP.

## 2. TESTING FOR UNARTICULATEDNESS

### 2.1. B-TYPE UNARTICULATED CONSTITUENTS

B-type unarticulated constituents are constituents of the truth-conditional interpretation of an utterance which are not syntactically articulated in the uttered sentence, yet cannot be disregarded without making the utterance semantically unevaluable. Thus

(6) John plays well

can be understood as meaning that John plays the cello well, or that he plays chess well. *There has to be something which John is said to play well, for the utterance to express a definite proposition.*<sup>7</sup> Yet that thing is not articulated in the sentence. The notion of an unarticulated constituent was originally introduced by John Perry in connection with such (B-type) cases.

We find a similar notion in Bach's writings about semantic underdetermination and 'completion' (e.g. Bach 1994a: 268-269). According to Bach, if someone says that 'John is too short', what John is too short *for* must be identified in order to assign a truth-value to the statement. (The utterance does not express the proposition that John is too short for something or other.) Yet that constituent of the proposition is not syntactically articulated, as it would be if the speaker had said 'He is too short *to be a British policeman*'. The sentence is not even elliptical, Bach insists: it is syntactically complete as it is. Yet it is *semantically incomplete*, like Perry's rain example. Without the unarticulated constituent provided through 'completion', the sentence expresses only a 'propositional radical'. Other examples mentioned by Bach include:

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<sup>7</sup> This is debatable. It can be argued that (6) has a reading on which it means that John plays well in general (whatever game is at issue). (See section §2.3 for similar remarks about 'It's raining'.)

*(argumental underdetermination)*

Mary finished. (what?)

The cow jumped over. (what?)

Gentlemen prefer blondes. (to what?)

Mutual knowledge is not relevant. (to what?)

John is ready. (for what?)

*(parametric underdetermination)*

That lamp is short/cheap/old. (relative to what?)

That employee is good/talented/valuable. (in what respect?)

Even cowgirls sing the blues. (in addition to whom?)

Many other examples often discussed in the literature on context-sensitivity (e.g. implicitly relational words like ‘local’, ‘enemy’ or ‘home’) also require completion, and are treated by Perry as illustrating the phenomenon of unarticulated constituency (Perry 1998).

A significant number of the examples discussed by Stanley belong to that category. They are B-type unarticulated constituents. But, I will argue, it is a mistake to discuss such examples in connection with the debate about TCP and free enrichment (as Stanley does). Whenever completion is required in order to get a full-fledged proposition, the constituent which has to be contextually provided is ipso facto *not* an unarticulated constituent in the (strong) sense that is relevant to the debate between TCP and I-Minimalism. To be sure, the constituent is unarticulated in *some* sense. There is a difference of explicitness between ‘John is too short’ and ‘John is too short to be a British policeman’; a difference that can be captured by saying that something which is articulated in the second sentence remains unarticulated in the first one (see below). Still, what Bach describes as ‘completion’ is but a special case of saturation, hence not an instance of free enrichment at all.

Take the adjective ‘small’, which is an instance of ‘parametric underdetermination’. It expresses a complete content only when a comparison class has been provided. That is a conventional, linguistic property of the expression. (Or so I

claim.)<sup>8</sup> The need for completion is an integral part of the meaning of the adjective, just as it is an integral part of the meaning of the genitive. ‘John’s car’ means *the car that bears R to John*; no definite content is expressed unless the free variable ‘R’ has been given a value. Similarly, ‘small’ means *small for an F*. No definite content is expressed by a sentence such as ‘Sherman is small’ unless a value is provided for the variable ‘F’.

That is not to say that there is no difference between expressions like ‘small’ and, say, the genitive. In certain respects they behave quite differently. For example, the genitive is not bindable, that is, the value of the variable ‘R’ must always be contextually identified and cannot vary according to the values introduced by some operator in the sentence. In contrast, many expressions in need of contextual completion are bindable, as Partee (1989) and Mitchell (1986) first pointed out. Thus Stanley gives the following example (to show that the adjective ‘small’ carries with it a free variable):

Most species have members that are small

Here, instead of being contextually specified, the comparison class varies with the values introduced by ‘most species’: each species in turn serves as comparison class for

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<sup>8</sup> One of the referees was unconvinced. « Compare the case of ‘weigh’. Since weight is relative to a gravitational field, (...) ‘John weighs 150 lbs.’ has to be interpreted relative to the gravitational field at the surface of the earth», but that does not seem to be in virtue of a convention of English. What’s the relevant difference between ‘weigh’ and ‘small’ ? My tentative answer is this. We know, as English speakers, that ‘small’ is a relative predicate. Without such knowledge, we would be unable to ascribe truth-conditions to sentences involving that predicate (since the contextual parameter is liable to vary from utterance to utterance). ‘Weigh’ is also a relative predicate, as the referee points out, but we don’t (have to) know that in order to be linguistically competent. That piece of knowledge is not required to assign truth-conditions to sentences involving ‘weigh’, because the relevant parameter is held constant. See §1.3 on the difference between the communicational and the metaphysical.

smallness. But this difference between bindable and unbindable context-sensitive expressions is irrelevant to the articulatedness issue. We find exactly the same difference between indexical expressions (in the broad sense): some — e.g. ‘I’, ‘here’, ‘now’ — are rigid and unbindable, others — third-person pronouns, demonstratives — are flexible and bindable. In all cases, however, when a definite value is contextually provided for the indexical, it is obviously articulated (by the indexical itself). Similarly, in the other type of example, I think the contextually provided element (the comparison class, or the relation  $R$ ) is somehow ‘articulated’, in virtue of the simple fact that its contextual provision is *required for the interpretation of a particular linguistic expression*.

From what I have just said it follows that the lexical items in need of completion in Bach’s examples are somewhat similar to indexicals and can receive a similar treatment. Consider, for instance, ‘John is too short’. Arguably, ‘too’ maps the property of being short onto a different property: the property of being too short, that is, the property of being short to a degree  $n$  such that any degree of shortness equal or superior to  $n$  prevents a certain condition  $c$  (e.g. being a British policeman) from obtaining. (This is very rough, I admit.) The content of ‘too’ can therefore be construed as a certain function  $f_{\text{too}}$  from properties to properties. But that content is not fixed once for all; it varies contextually. For, as we have seen, the condition  $c$  must be specified or identified;<sup>9</sup> otherwise the construction is semantically incomplete. Different conditions  $c$  will determine different functions  $f_{\text{too}}$  as contents for the adverb ‘too’: *too* \_\_\_ *to be true*, *too* \_\_\_ *to be a British policeman*, etc. ‘Too’ can therefore be treated as an expression with an ‘unstable character’ (Kaplan 1989). The character of ‘too’ can be represented as a (partial) function from contexts to contents, mapping contexts in which a certain condition  $c$  is pragmatically salient to the functions  $f_{\text{too}}$  which are the content of ‘too’ in those contexts. In this framework, ‘too’ is an indexical adverb, like ‘thus’. (On indexical adverbs, see Heal 1997.)

The same sort of analysis can be made to work for all the ‘completion’ type of

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<sup>9</sup> This is in contrast to the degree  $n$ , which does not have to be identified or specified.



examples discussed by Stanley. Just as the reference of an indexical depends upon the context, the determinate property expressed by a predicate such as ‘small’, ‘local’ or ‘enemy’ in the relevant examples depends upon a contextual factor, and does so in a systematic manner.

The analogy between indexicality and B-type unarticulated constituency should not be pushed too far, however. Expressions like ‘small’, ‘local’ etc. have a distinctive property which sets them apart from indexicals: they do not *always* function in an indexical manner, but have a dual use.<sup>10</sup> When the comparison class is made explicit, as in ‘Sherman is small for a basketball player’, the denotation of the complex predicate (‘small for a basketball player’) is independent from extralinguistic context, and the expression ‘small’ no longer functions as an indexical. It is only when the comparison class is left implicit, as in ‘Sherman is small’, that the property denoted by the predicate is denoted in a context-dependent manner : the predicate may then still denote the property of being small for a basketball player, but it denotes that property only with respect to a context in which the class of basketball players is made salient as the relevant comparison class. In other contexts the predicate will possibly denote other properties, or (if no comparison class is singled out) it will fail to denote anything. The dual use of those expressions is interesting because it shows that a constituent of content can sometimes shift to the status of contextual parameter.<sup>11</sup> That, I think, is what typically happens in B-type cases.

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<sup>10</sup> This property does not extend to the genitive, which should therefore be classified in the same category as indexicals (*pace* Crimmins 1992 : 18).

<sup>11</sup> Such a shift arguably goes together with a modification in the valence of the predicate. Take an expression like ‘on the left’. It can function as a one-place predicate, as when I direct you by saying : ‘The table is on the left’. That is an *indexical* one-place predicate : the property it denotes is relativized to, and varies with, a point of reference given in the context. If I say ‘The table is on your left’, ‘on the left’ now functions as a two-place predicate, and is no longer indexical (or not to the same extent). That phenomenon, which drove the interest of B-type unarticulated constituent theorists such as Perry, Partee, and Barwise, is related to the issue of variable polyadicity which will be dealt with below (§2.4).

Let us take stock. When the relevant parameter — the comparison class, in the case of ‘small’ — is contextually provided rather than made explicit in the sentence, there is an obvious sense in which the parameter in question is not articulated : no word or morpheme in the sentence stands for it. But there is also a sense in which it *is* ‘articulated’, as we have seen : *there is an expression in the sentence*, namely the adjective ‘small’ itself, *that triggers the search for a relevant comparison class*, just as an indexical triggers the search for an appropriate contextual value. A truly unarticulated constituent resulting from free enrichment must not even be articulated in that second, weaker sense. It must not result from an obligatory process of saturation or ‘completion’.

Just as there are two senses of ‘articulated’, there are two senses of ‘unarticulated’. In a weak sense, a constituent counts as ‘unarticulated’ if no word or morpheme in the sentence specifically stands for it, even if its contextual provision is *required* for the interpretation of a particular expression in the sentence. B-type unarticulated constituents are unarticulated in that sense. In a *stronger* sense, a constituent is unarticulated if it is not linguistically mandated but results from free enrichment. Only the strong sense matters to the debate between TCP and I-Minimalism. I will therefore use ‘unarticulated constituent’ in the strong sense from now on. In that sense, B-type unarticulated constituents are not truly unarticulated. Their contextual provision is an instance of saturation, not an instance of free enrichment.

## 2.2. TRUE UNARTICULATED CONSTITUENTS ARE NEVER MANDATORY

In the previous section I claimed that B-type unarticulated constituents — those unarticulated constituents which are necessary for truth-evaluability — are ‘articulated’ to some degree, because there is something in the sentence that triggers/mandates the search for the relevant contextual element. But that claim precisely is what Kent Bach and John Perry seem to reject. According to them, it is possible for a contextually provided constituent to be both necessary for truth-evaluability (B-type) *and* truly

unarticulated.

To believe in semantically mandatory yet truly unarticulated constituents one must hold the following thesis: that the contextual provision of some propositional constituent may be semantically necessary (necessary for truth-evaluability) *for purely metaphysical reasons*, without being made necessary by the conventions of the language. Consider Perry's 'rain' example once again. The verb 'to rain' does not take a locational complement, except optionally in the form of an adjunct. Still, Perry tells us, the relation which the verb denotes *is* dyadic — it comprises two argument-roles. That is a metaphysical fact about that relation. For that reason, even though, syntactically, the 'place' argument-role is optional and does not have to be filled, semantically it is foregrounded and requires completion. That is so in virtue of the simple fact that *that* relation is denoted. The situation is the same with other cases of 'argumental underdetermination'. For example, the thing noticed is an argument of the relation denoted by 'notice'. That argument may remain syntactically unarticulated ('I noticed'), but it has to be contextually provided since the argument-role which it fills is constitutive of the relation which the verb denotes.

This line of reasoning presupposes that *the same* two-place relation is expressed or denoted whether or not, syntactically, the verb takes an overt complement. But how do we know it is the same relation? In some cases at least, a case can be made in favour of treating the objectless verb as denoting not the original two-place relation, but a property generated by existentially quantifying the object argument-role of the original relation. As Quine pointed out, from any  $n$ -place predicate  $P$ , one can generate an  $n-1$  place predicate by applying to  $P$  an operator he calls 'Derelativization', which he describes as follows:

(Der  $P$ )  $x_1 \dots x_{n-1}$  iff there is something  $x_n$  such that  $Px_1 \dots x_n$

If ' $P$ ' is a two-place predicate, 'Der  $P$ ' will be a genuine one-place predicate, denoting a property rather than a relation (Quine 1960: 229-231).

How do we know that suppressing the object of the verb in surface syntax does

not amount semantically to the same result as applying ‘Der’ to the original two-place predicate? In some cases it seems that it does. Thus consider the verb ‘to eat’. Among the argument-roles that are constitutive of the Eat relation, there is the Eater and the Food. From that relation we can extract a property, by existentially quantifying the Food argument-role. Let us define the *property* of eating (Eat<sup>1</sup>) as the property one has in virtue of filling the Eater argument-role in some instance of the dyadic Eat relation (Eat<sup>2</sup>). It follows that one eats<sup>1</sup> iff there is something that one eats<sup>2</sup>. Both the property and the relation exist (notwithstanding the fact that the former depends upon the latter). We know that the transitive verb ‘eat’ denotes the relation; but how do we know whether the intransitive verb ‘eat’ (as in ‘John eats when he is nervous’) denotes the same dyadic relation, or the derived property? We can reason as follows: *If* the dyadic relation were expressed, the Food argument-role would require completion (since there is no operator to bind it). But no such completion is required: ‘x eats’ is true iff there is something *y* that *x* eats<sup>2</sup>. The fact that the relevant *y* does not have to be specified supports the conclusion that intransitive ‘eat’ denotes the property of eating<sup>1</sup>. In contrast, intransitive ‘notice’, as in ‘I noticed’, behaves differently: ‘x noticed’ is definitely *not* true iff *there is* something *y* which *x* noticed. Rather, it is true, for some contextually specified thing *y*, iff *x* noticed *that thing*. The relevant *y* has to be specified for the utterance to be truth-evaluable.<sup>12</sup> Similarly, ‘x finished’ is not true iff there is something or other which *x* finished. The object argument of ‘finish’ must be specified, even if it is unarticulated in surface syntax. This gives us reason to believe that the same two-place relation is expressed by ‘finish’ (or by ‘notice’) whether or not the complement is overtly articulated.<sup>13</sup>

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<sup>12</sup> On the contrast between the two sorts of verbs, see Fillmore 1986. As Cresswell pointed out, we observe the same contrast between two sorts of relational nouns: «Unlike nouns like *mother* and *sister* whose default cases are existentially quantified the default cases of *enemy* and of *representative* appear to have the second argument supplied contextually» (Cresswell 1996: 39).

<sup>13</sup> The view I have just sketched seems to conflict with something I said earlier (fn 11). In connection with predicates like ‘on the left’, which have a dual use, I said that the shift from the explicit use to the

To sum up, we cannot assume that the intransitive variant denotes the same two-place relation as the transitive verb from which it is derived, and conclude that the suppressed argument is semantically mandatory (necessary for truth-evaluability). Rather, we must *look and see* whether or not the argument is mandatory, and use the empirical fact that it is (or is not) to determine what the verb denotes (the relation or the property). The empirical fact in question is a *brute linguistic datum*. It is a conventional property of the English verb ‘eat’ that (i) it can be used intransitively (in contrast to ‘devour’), and (ii) when so used it does not require completion of the suppressed argument-role. Similarly, it’s a conventional property of the English verb ‘finish’ that (i) it too can be used intransitively (in contrast to ‘complete’), but (ii) when so used it

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indexical use goes together with a modification in the valence of the predicate: ‘on the left’ functions as an indexical one-place predicate in ‘The table is on the left’, and as a non-indexical two-place predicate in ‘The table is on your left’. If we opt for this view, as I think we should, then we must say the same thing regarding ‘notice’ and ‘finish’, since here too we move from an explicit use (‘I noticed the accident’) to an indexical, context-dependent use (‘I noticed’). But if we take this line, we lose the contrast between intransitive ‘eat’, which denotes a property, and intransitive ‘notice’, which denotes a two-place relation.

That objection raises delicate issues which cannot be dealt with in this paper. Let me simply say this: I think that, by appealing to two-dimensional semantics (Stalnaker 1999), we can reconcile the two views — the view that the indexical alternation characteristic of verbs like ‘notice’ and ‘finish’ affects the valence of the verb, and the view that the contrast between intransitive ‘notice’ and intransitive ‘eat’ can be drawn in terms of the number of argument-roles of the denoted relations. In two-dimensional semantics there are two distinct notions of content: the ‘horizontal’ or ‘secondary’ content on the one hand (content in the standard, Kaplanian sense), and the ‘diagonal’ or ‘primary’ content on the other hand. (The ‘primary/secondary’ terminology comes from Chalmers 1996. Stalnaker uses ‘diagonal/horizontal’.) In this framework the secondary content of both intransitive ‘notice’ and intransitive ‘eat’ will be a property, as the variable polyadicity view suggests; yet the primary content of intransitive ‘notice’ will be a two-place relation, while the primary content of intransitive ‘eat’ will remain a property.

does require completion of the suppressed argument-role. Since completion, in this sort of case, is required *in virtue of a linguistic convention governing the use of a particular lexical item*, the propositional constituent contextually provided through completion is articulated, at some level. It is not a genuine unarticulated constituent.

We can imagine a context in which ‘Look! He’s eating!’ would be understood as stating not merely that the individual denoted by ‘he’ is eating something or other, but that he is eating *a certain salient piece of food*, e.g. a dangerous mushroom which has been the focus of attention for some time. The eaten object would *then* be contextually provided without being linguistically required, since the intransitive verb only denotes the property and does not require completion. In such a case the eaten object would be a genuine unarticulated constituent resulting from free enrichment. But in the above cases of ‘argumental underdetermination’, the contextually provided constituent is (weakly) articulated. Its contextual provision, therefore, is a bottom-up pragmatic process — a variety of saturation — rather than a top-down pragmatic process of free enrichment.

I conclude that what characterizes genuine unarticulated constituents is the fact that their contextual provision is not mandatory — it is not required in virtue of a linguistic convention governing the use of a particular construction (or class of constructions). *In context*, it may be that the unarticulated constituent is ‘required’; but then it is required *in virtue of features of the context*, not in virtue of linguistic properties of the expression-type. A constituent is mandatory in the relevant sense only if *in every context* such a constituent has to be provided (precisely because the need for completion is not a contextual matter, but a context-independent property of the expression-type). This, then, is the criterion we must use when testing for (genuine) unarticulatedness: Can we imagine a context in which the same words are used normally, and a truth-evaluable statement is made, yet no such constituent is provided? If we can imagine such a context, then the relevant constituent is indeed unarticulated (in the strong sense); if we cannot, it is articulated, at some level of linguistic analysis.

### 2.3. 'IT IS RAINING'

Perry says that the contextual provision of a place is semantically mandatory for interpreting a weather statement like 'It's raining'. If that is right, then what I called the prototypical example of an unarticulated constituent is not really unarticulated (in the strong sense) but is the value of a hidden variable. That, indeed, is the view offered by Ken Taylor in defense of Minimalism (Taylor 2001).

Taylor states his general view ('Parametric Minimalism') as follows:

A sentence typically sets up a semantic scaffolding which constrains, without determining, its own contextual completion. The sentence does so by containing a variety of parameters the values of which must be contextually supplied in some more or less tightly constrained way. Sometimes the to-be-contextually-evaluated parameter is explicitly expressed in the syntax of the sentence. This is the case with explicit indexicals, demonstratives and also with verb tenses. Sometimes, however, the to-be-contextually-evaluated parameter is "suppressed" or hidden. Saying just where such parameters hide is a difficult matter — one perhaps better left to linguists than to philosophers. But I venture the hypothesis that some unexpressed parameters hide in what we might call the subsyntactic basement of suppressed verbal argument structure. (Taylor 2001 : 53)

The subsyntactic hypothesis applies, in particular, to 'It's raining':

The view which I favor supposes that the verb 'to rain' has a lexically specified argument place which is  $\theta$ -marked **THEME** and that this argument place takes places as values. This is a way of saying that the subatomic structure of the verb 'to rain' explicitly marks rainings as a kind of change that places undergo. (...) Thus though:

(7) It is raining

is missing no syntactically mandatory sentential constituent, nonetheless, it is semantically incomplete. The semantic incompleteness is manifest to us as a felt inability to evaluate the truth value of an utterance of (7) in the absence of a contextually provided location (or range of locations). This felt need for a contextually provided location has its source, I claim, in our tacit cognition of the syntactically unexpressed argument place of the verb 'to rain'. (Taylor 2001 : 53)

I think such an analysis is unavoidable once we accept Perry's claim that, to evaluate (7), we need a place. Or at least, it is unavoidable if we understand that claim as follows: for any token *u* of the complete sentence 'It is raining', it is necessary, in order to evaluate *u*, to be given a place. If the necessity concerns *all tokens*, it is a linguistic property of the sentence-type, hence, presumably, it arises from the internal lexical structure of the verb 'to rain'.

But must we really accept Perry's claim, thus construed? Can we not imagine a context in which 'It is raining' would be evaluable even if no particular place were contextually singled out? I have no difficulty imagining such a context. I can imagine a situation in which rain has become extremely rare and important, and rain detectors have been disposed all over the territory (whatever the territory — possibly the whole Earth). In the imagined scenario, each detector triggers an alarm bell in the Monitoring Room when it detects rain. There is a single bell; the location of the triggering detector is indicated by a light on a board in the Monitoring Room. After weeks of total drought, the bell eventually rings in the Monitoring Room. Hearing it, the weatherman on duty in the adjacent room shouts: 'It's raining!' His utterance is true, iff it is raining (at the time of utterance) in some place or other.

The fact that one can imagine an utterance of 'It's raining' that is true iff it is raining (at the time of utterance) in some place or other arguably establishes the pragmatic nature of the felt necessity to single out a particular place, in the contexts in which such a necessity is indeed felt. If that is right, there is no need to posit a lexically specified argument-role for a location in the sub-atomic structure of the verb 'rain': 'Rain' is like 'dance' and other action verbs, contrary to what Taylor claims (2001: 54). That raining must take place somewhere or other is a metaphysical fact, not a linguistic fact. That fact does not prevent an utterance like (7) from expressing a fully determinate proposition even if no place is contextually provided.

When a particular place is contextually provided as relevant to the evaluation of the utterance, it is for pragmatic reasons, not because it is linguistically required. In



such cases, therefore, the place is a genuine unarticulated constituent. When we say ‘It’s raining’ and mean: It’s raining *in Paris*, the location is an unarticulated constituent of the statement, just as, when we say ‘Look! He is eating’ and mean: He is eating *the dangerous mushroom*, the mushroom is an unarticulated constituent. This is very different from cases of ‘completion’ where, as Taylor puts it, a sub-atomic variable « makes its presence felt by ‘demanding’ to be assigned a contextually supplied value ».

## 2.4. VARIADIC FUNCTIONS

According to Perry, Taylor and most unarticulated constituency theorists, the location argument-role is part and parcel of the relation denoted by the verb ‘to rain’. As Crimmins puts it, « what we know about rain makes it obvious that this relation must have as arguments at least a time and place » (1992: 17). Since the relation comprises this argument-role, whenever a location is contextually provided it fills that role and thereby finds its way into the proposition expressed by the utterance.

I have defended a more radical conception of (genuine) unarticulated constituency. According to me, a true unarticulated constituent is not even weakly articulated. Thus, I have argued, the relation denoted by the verb ‘to rain’ is zero-place and no more involves an argument-place for a location than does the (one-place) relation denoted by the verb ‘to sleep’. Of course, there can be no instance of the property of sleeping without there being also an instance of the more complex three-place relation of sleeping-at-a-place-at-a-time; that, as I said, is a metaphysical fact. In virtue of the same fact, there can be no instance of the zero-place Rain relation without there being an instance of the more complex Rain-at-a-place relation. But the relation denoted by the verb ‘to rain’ *is* the zero-place relation. It follows that the contextually provided location — when there is one — is unarticulated in the strong sense: it is not even weakly articulated via the semantics of the verb ‘to rain’, as Taylor suggests.

In this framework an obvious difficulty arises, which does not arise on the Perry-Taylor view. If the relation itself does not come with an empty slot for a location,

how will the contextually provided location manage to fill a role in that relation? How will the location find its way into the proposition? How will the Rain relation and the location of rain cohere into a single proposition, if the relation does not comprise an empty slot in which the location can fit? This reminds us of the well-known problem of the *unity of the proposition*.

Something — but what? — must provide the glue for holding together the constituents of the proposition. That is (or was) the problem of the unity of the proposition. Frege's solution to that problem is justly famous: According to Frege, what provides the glue is the unsaturated nature of the relation, which comprises empty slots for the arguments. Now there is at least an apparent tension between that solution (which I accept) and the theory I have sketched. Unarticulated arguments are characterized by their optionality, and that means that there *isn't* any 'empty slot' in need of completion waiting for them. This raises a major difficulty for our account: If there is no empty slot in the relation, how will the unarticulated constituents, once provided, cohere with it in the proposition? What will solve the problem of the unity of the proposition?

When explicit, the location of rain is typically indicated by means of modifiers such as 'in Paris', 'here', or 'everywhere I go'. Such modifiers are syntactically optional. They make a predicate out of a predicate. If we start with a simple predicate, say 'rain', we can make a different predicate out of it by adjoining an adverb such as 'heavily' or a prepositional phrase such as 'in Paris'. Thus we go from 'It's raining' to 'It's raining heavily' to 'It's raining heavily in Paris'. Semantically, I suggest that we construe the modifier as contributing a certain sort of function which I call a *variadic function*. A variadic function is a function from relations to relations, where the output relation differs from the input relation only by its decreased or increased adicity. Adding a predicate modifier (adverb or a prepositional phrase) to a predicate expressing a  $n$ -ary relation  $R^n$  thus results in a complex predicate expressing an  $n+1$ -ary relation, in which the  $n+1$ th argument is a *circumstance*: a time, a location, a manner, or what not.

A relation can be represented as a set of interconnected argument-roles, as in frame semantics. Thus the relation Eat contains two argument-roles : the Eater and the Food. The effect of an ‘expansive’ variadic function of the sort contributed by adverbial modifiers is to add an argument-role. The output relation therefore contains *the same argument-roles* as the input relation, plus the extra argument-role provided by the variadic function. For example, in the statement ‘John eats in Paris’ the prepositional phrase ‘in Paris’ contributes a variadic function which maps the property of eating, ascribed to John in the simpler statement ‘John eats’, onto the dyadic relation Eat\_in ( $x, l$ ) between an individual and a location. *That* relation is predicated of the pair <John, Paris> in the more complex statement. Note that the prepositional phrase ‘in Paris’ contributes not only the variadic function, but also the argument (Paris) which fills the extra argument-role.<sup>14</sup>

There are also ‘recessive’ variadic functions that decrease the valence of the input relation by suppressing an argument-role.<sup>15</sup> In English, various alternations such as the *passive alternation* and the *intransitive alternation* (Levin 1993) can be described in such terms. The operation of passivation (‘John kisses Mary’ → ‘Mary is kissed’) suppresses the argument-role corresponding to the subject of the active sentence, whereas intransitivation (‘John eats the apple’ → ‘John eats’) has the effect of suppressing the argument-role corresponding to the direct object of the verb. Quine’s ‘Der’ operator, which I mentioned earlier, does something similar: it decreases the adicity of the input relation  $R^n$  by existentially quantifying the  $n$ th argument. But I think recessive variadic functions do not, by themselves, involve existentially quantifying the suppressed argument-role. Thus if we start with ‘John speaks to Mary’, we can suppress the argument-role of Addressee and generate ‘John spoke’. This does not entail that John spoke to someone. Whether or not the suppression of an argument-

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<sup>14</sup> As McConnell-Ginet puts it, such phrases « have a dual role of augmenting the predicate to which they attach and of providing an argument for the augmented predicate » (McConnell-Ginet 1982: 171).

<sup>15</sup> ‘Recessive’ comes from Lucien Tesnière, a pioneer in that area (Tesnière 1969). ‘Expansive’ comes from Dowty (cited in McConnell-Ginet 1982: 168), and is also reminiscent of Bach’s ‘expansion’.

role, effected through a recessive variadic function, amounts to existentially quantifying that argument-role depends upon the nature of the argument-roles that remain unsuppressed. To fill the Speaker argument-role one need not have an addressee. One can speak without speaking to anyone. But to fill the Eater argument-role, arguably, there must be something (edible) that one eats: No Eater without an Eatee. The suppressed argument-role therefore remains in the background via the Eater argument-role which, for metaphysical reasons, cannot be entirely dissociated from it. That is why ‘John is eating something’ can be inferred from ‘John is eating’. That, according to me, is a nonformal, ‘metaphysical’ inference similar to that from ‘Mary is dancing’ to ‘Mary is dancing somewhere’.<sup>16</sup>

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<sup>16</sup> It is arguably for the same sort of reasons that the agent remains lurking in the background even after the Agent argument-role has been suppressed through passivation. The fact that ‘The ship was sunk voluntarily/to collect the insurance’ is possible, while ‘The ship sank voluntarily/to collect the insurance’ is not, is sometimes taken to show that in the passive sentence the Agent argument-role has not been suppressed but remains covertly present at some level of syntactic structure (Stanley forthcoming). Chomsky argues that the argument-role is present lexically (in the valence of the verb) even though, syntactically, it is not (Chomsky 1986 : 32-35). As far as I am concerned, I favour the hypothesis that the argument-role is metaphysically implied rather than linguistically realized. A passive sentence such as ‘The ship was sunk’ results from passivation of the *transitive* ‘sink’, as in ‘John sank the ship’. Now the ship plays two roles in (the relations described by) sentences such as ‘The ship was sunk’ or ‘John sank the ship’ : the P-role (‘patient’ or thing acted upon), and the U-role (undergoer of change of state). ‘John sank the ship’ means *John did something to the ship that resulted in the ship’s sinking*, where the two tokens of ‘the ship’ correspond to the P-role and the U-role respectively. In ‘The ship sank’, the ship plays only the U-role. Now nothing can fill the P-role unless there is an agent doing something. Hence expressions like ‘voluntarily’ or ‘to collect the insurance’, which qualify the manner of acting or the goal of an agent, can be adjoined to sentences like ‘The ship was sunk’, since the P-role which occurs in the denoted relation is metaphysically tied to the (linguistically unrealized) Agent role. In contrast, the expression cannot be adjoined to sentences like ‘The ship sank’, because no action is denoted and no agent is even ‘lurking in the background’. (The explanation I have just offered is very tentative, of

The variadic functions that increase the valence of the input relation through the addition of a circumstance to the set of its argument-roles can be represented by means of an operator (or rather, a family of operators) ‘Circ’. When applied to an  $n$ -place predicate  $P$ , ‘Circ’ produces an  $n+1$  place predicate (‘Circ  $P$ ’). There will be as many Circ-operators as there are argument-roles which can be added to the set of argument-roles of the input relation. There will be a temporal Circ-operator, a locational Circ-operator, etc., depending on the nature of the extra argument-role. Which Circ-operator is at issue will be indicated by means of a subscript. For example, the operator ‘Circ<sub>location</sub>’ contributed by locative modifiers (such as the prepositional phrase ‘in Paris’) will map e.g. the Eat relation to the Eat\_in relation by adding a Location argument-role:

$$\text{Circ}_{\text{location}}(\text{Eats}(x)) = \text{Eats\_in}(x, l)$$

As I pointed out, a modifier such as ‘in Paris’ does not merely increase the valence of the input relation by adding a new argument-role; it also provides the extra argument needed to fill that argument-role. ‘John eats in Paris’ should therefore be represented as follows:

$$\text{Circ}_{\text{location: Paris}}(\text{Eats}(\text{John})) = \text{Eats\_in}(\text{John}, \text{Paris})$$

Like the prepositional phrase ‘in Paris’, the Circ-operator thus completed does two things: map the Eat relation to the Eat\_in relation by adding a Location argument-role; and supply a particular value (Paris) for that role.<sup>17</sup>

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course. There may be decisive syntactic evidence that the argument-role has not really been suppressed through passivation. But the mere fact that ‘The ship was sunk to collect the insurance’ is good while ‘The ship sank to collect the insurance’ is bad is not sufficient to establish such a conclusion, contrary to what Stanley suggests.)

<sup>17</sup> According to McConnell-Ginet, who puts forward a similar proposal, adverbs such as ‘slowly’ do not contribute an argument filling the extra argument-role, but they existentially quantify the new argument-

Let us now go back to the problem we started with. Just as the modifier is syntactically optional, the circumstance it introduces is semantically optional *with respect to the input relation*. The input relation takes  $n$  arguments, and the circumstance is not one of them. The circumstance is contributed from outside, as it were; it is not demanded by the relation itself, as it would be if it filled one of the argument-roles that are constitutive of the relation. Still, the problem of the unity of the proposition does not arise. Though optional with respect to the input relation, the circumstance is not left free-floating in the proposition, with no slot to occupy. That is so because, by applying to the input relation, the variadic function generates a new relation: the output relation, which counts an extra argument-role. With respect to *that* relation, the circumstance is not optional. It is a genuine argument of the output relation, even if, *qua* circumstance, it is additional (hence not an argument) with respect to the input relation. To put it in a nutshell: there are two relations — the input relation and the output relation — hence the optionality of the circumstance with respect to the input relation is consistent with the propositional integration of the circumstance *qua* argument filling a slot in the output relation.

Let us apply this general solution to the rain example. As we have seen, the Rain relation does not involve an empty slot for a location. Thus we can say ‘It is raining’ without providing a location for the rain, whether linguistically or even contextually. That is the lesson of the weatherman example from section 2.3. But if we do provide a location, either through the adjunction of a prepositional phrase or by purely contextual means, *we thereby generate a new relation, in which there is an empty slot, an argument-role which the location fills*. Since there is an argument place for the location in the output relation (though not in the input relation), the location finds its way into the proposition and coheres with the other constituents. This is consistent with the

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role while contributing a property of its values (McConnell-Ginet 1982). If we accept McConnell-Ginet’s idea, ‘John eats slowly’ will be analysed as follows:

*Circrate*: *slow* (Eats (John)) =  $(\exists r)$  (Slow ( $r$ ) & Eats\_at\_rate (John,  $r$ ))

That is, there is a rate  $r$  which is slow, such that John eats at that rate.

optionality of the location with respect to the input relation — the relation to which, implicitly or explicitly, the variadic function applies.<sup>18</sup>

### 3. THE ARGUMENT FROM BINDING: A REFUTATION

#### 3.1. THE BINDING CRITERION

I have argued that, whenever a contextually provided constituent is unarticulated (in the strong sense), we can imagine contexts in which the lack of such a constituent would not prevent the sentence from expressing a complete proposition. This gives us a criterion — the Optionality Criterion — for determining when a contextually provided constituent is truly unarticulated and when it is not.

#### *Optionality Criterion*

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<sup>18</sup> The view I have sketched escapes the difficulties that beset the traditional ‘argument analysis’ of adverbs. The problem with treating what adverbs contribute as further arguments of the relation expressed by the verb is that this assumes something patently untrue: that « the number and identity of adverbial arguments for a given predicate can be exactly specified », and that such information « must be regarded as implicit even when it is not overtly expressed » (Larson and Segal 1995: 468). As adverbs and modifiers can always be multiplied, and new dimensions of modification can always emerge, the standard argument analysis is clearly hopeless. But the view I have sketched meets both objections: the number and identity of adverbial arguments do not have to be specified in advance, and whatever information they convey does not have to be regarded as implicit when they are not provided (whether linguistically or contextually). For they are arguments only in the output relation. They are not arguments in the input relation, hence they don’t have to be specified at that level, that is, in the semantics of the verb.

Another objection to the standard ‘argument analysis’ is that, contrary to the ‘event analysis’ put forward by Davidson, it does not account for systematic inferences from e.g. ‘John talked rapidly’ to ‘John talked’. But the present view has no trouble accounting for such inferences (see the appendix at the end of this paper).

Whenever a contextually provided constituent is (truly) unarticulated, we can imagine another possible context of utterance in which the contextual provision of such a constituent would not be necessary for the utterance to express a complete proposition.

Using that criterion, I have established that the contextually provided location (when there is one) is a genuine unarticulated constituent of the statement that it is raining, precisely because it is optional. There are contexts in which the sentence ‘It is raining’ expresses a complete proposition even though no location is contextually provided as that which the utterance concerns.

This result conflicts with what we get when we apply another criterion: the Binding Criterion, which Stanley uses in his paper.

### *Binding Criterion*

A contextually provided constituent in the interpretation of a sentence *S* is articulated whenever the argument-role it fills can be intuitively ‘bound’, that is, whenever what fills that role can be made to vary with the values introduced by some operator prefixed to *S*.

For binding to occur, Stanley argues, there must be a bindable variable in the sentence to which the operator is prefixed; but if there is such a variable, representing the argument-role to be filled, then the contextually provided constituent which fills it is articulated — it is the (contextual) value of the variable.

The conflict arises because the location of rain, which is a genuine unarticulated constituent in virtue of the Optionality Criterion, turns out to be articulated in virtue of the Binding Criterion. We can say:

(8)     Wherever I go, it rains

In such a statement the place where it rains can be understood as varying with the places introduced by the quantifier ‘wherever I go’. On the most natural interpretation the statement means that:

For every location *l* such that I go to *l*, it rains in *l* (when I am there)



For such binding to occur, Stanley says, there must be a free variable  $l$  in the sentence ‘it rains’. That variable can either be bound (as in (8)), or be contextually given a value (as in (7)). Whatever location may be contextually provided for the rain is therefore not a genuine unarticulated constituent, but the contextual value of a free variable in logical form.

The major problem I see with Stanley’s argument against unarticulated constituents is that it works too well. It obliges us to treat as articulated not only contextual elements which can plausibly be regarded as values of variables in sub-atomic structure, as well as elements for which at least the question arises, but also many contextual elements for which that sort of treatment is simply out of question. This is a serious weakness which should lead one to doubt the reliability of the Binding Criterion.

Let us start with an unproblematic case, in which the Binding Criterion works smoothly. We can, as Partee (1989) pointed out, bind the ‘object’ argument-role of ‘notice’ even though it is unarticulated in surface syntax:

Every secretary made a mistake in his final draft. The good secretary corrected his mistake. *Every other secretary did not even notice.*

Applying the Binding Criterion, we conclude that the suppressed argument-role is still represented in logical form by a free variable. It follows that, when we say ‘I noticed’, the contextually provided object is articulated, appearances notwithstanding. This is OK, for there are reasons to believe that the object of ‘notice’ is indeed represented by a free variable in sub-atomic structure. But the Binding Criterion delivers the same verdict in indefinitely many cases in which the *unarticulated* nature of the constituent seems pretty well established. Let me give two striking examples.

The first example is adapted from David Rumelhart (1979: 78):

The policeman stopped the car

In interpreting this utterance we make certain assumptions concerning the way the car was stopped by the policeman. On the most natural interpretation we assume that the policeman issued appropriate signals to the driver, who stopped the car accordingly. But if we know, or suppose, that the policeman was actually *driving* the car in the reported scene, we will understand his stopping of the car very differently from the way we understand it when we assume that he was regulating the traffic. Quite different ‘manners of stopping’ are involved in the two cases. Those implied manners of stopping are part of the way we understand the utterance but they are *additional* aspects of the interpretation, linguistically optional hence external to what is said by minimalist standards. What is said in the minimal sense is only that the policeman stopped the car *in some way or other*. The specific manner of stopping is provided through ‘free enrichment’.

Here, as in the case of ‘It’s raining’, the Optionality Criterion tells us that the contextually provided manner of stopping is unarticulated. For we have no trouble imagining a context in which no such manner of stopping would be contextually specified. Moreover, in contrast to the ‘rain’ case, there is a wide consensus among theorists that the contextually provided manner of stopping in such an example is a pragmatic embellishment of the interpretation which is of no more concern to semantics than our tendency, as interpreters, to imagine the policeman dressed in a certain way. Indeed I think that *everybody*, including Stanley, would agree that in the policeman case the contextually provided constituent is pragmatic through and through. It is not part of the proposition literally expressed in the minimalist sense (what is said<sub>min</sub>). Yet the argument from binding shows that, *even in that case*, the contextually provided constituent is linguistically articulated. For we can say things like

However he did it, the policeman stopped the car  
In some way or other, the policeman stopped the car

meaning:

For some manner of stopping *m*, the policeman stopped the car in manner *m*.

If we apply the Binding Criterion, we shall have to conclude that the contextually provided manner of stopping is articulated and determined through a bottom-up process of saturation, like the reference of indexicals. The absurdity of this conclusion argues against the Binding Criterion.

The other example is even more striking. Remember the utterance: ‘Look! He is eating!’ We imagined a context in which a salient mushroom was understood as being the thing eaten. That the contextually provided constituent is unarticulated and results from free enrichment follows from the fact that intransitive ‘eat’, as Stanley himself accepts (p. 401, fn. 14), denotes the property of eating<sup>1</sup>. No contextual specification of the thing eaten is required in virtue of the semantics of the verb. *Still, intuitively, binding is possible*. We can say:

John is anorexic, but whenever his father cooks mushrooms, he eats.

On a natural interpretation, we understand that John eats *the mushrooms his father has cooked*. Intuitively, a form of binding is operative here; for the food eaten by John covaries with the food cooked by his father. Such examples show that intuitive binding, per se, does not entail articulatedness. The Binding Criterion, on which Stanley’s argument rests, must be rejected.

### 3.2. EXISTENTIAL CLOSURE BY DEFAULT?

We have seen that, sometimes, a contextually provided constituent is optional, even though the argument-role it fills is bindable. Its being optional suggests that there is no free variable in logical form; for if there were one, completion would be required whenever the variable is left unbound. For example, there are contexts in which the simple sentence ‘It is raining’ (with no operator in front to bind the alleged variable) is interpreted as *It’s raining in some place or other*. If there were a free variable in logical form, completion would be required and a definite location would have to be assigned to the variable in the course of truth-conditional interpretation. That fact argue against

the Binding Criterion, according to which bindability entails articulatedness.

In defense of the Binding Criterion, one could argue as follows. Who said that, whenever there is a free variable, completion was required? Following Partee and others (e.g. Nunberg 1992), we have noticed that there were two sorts of ‘free variables’ associated with indexicals and other context-sensitive expressions: those that are bindable and those that are not. The indexical ‘here’ acts as a free variable for a location (a location that has to be ‘proximal’, even if it need not be the place where the speaker is); but that variable is unbindable — its value can only be contextually provided. In contrast, ‘there’ also acts as a free variable for a location, but that variable *is* bindable. (I can say: ‘Whenever I go and visit my father’s new home, my brother is already there’, on a bound reading in which my father’s home keeps changing. I cannot say to my father: ‘Whenever I come and visit you in your new home, my brother is already here’, on a similarly ‘bound’ reading of ‘here’.) However we account for this distinction, it is an empirical fact that there are these two sorts of variable. Now, why not accept that there is another distinction, among bindable variables, between those which require completion when unbound, and those which do not? On this view, there are free variables in logical form which can be bound (as the location variable can, in ‘It is raining’) but which do not require completion when left unbound.<sup>19</sup> Such a free variable — let us call it an *optional* variable — can either be assigned a contextual value, or, if no value is contextually provided, undergo ECBD (existential closure by default). On this view it is the Optionality Criterion which must be given up, not the Binding Criterion. The fact that completion is optional in the alleged counterexamples to the Binding Criterion does not entail that the contextually provided constituent is unarticulated; all that fact shows is that, if articulated, the constituent in question is articulated by an optional variable, i.e. a variable susceptible to ECBD.

On the view I have just sketched, all the cases I have classified so far as genuine unarticulated constituents would turn out to be constituents articulated by an optional

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<sup>19</sup> Barwise (1989: 241 fn) speaks of « relations with optional arguments ». Perhaps that is what he meant (though his example suggests otherwise).

variable. For example, intransitive ‘eat’ would not longer be said to denote the property of eating<sup>1</sup>, but the relation of eating<sup>2</sup>. That relation, the ECBD theorist would argue, involves an argument-role for the Food, represented by a free variable in logical form. But that variable belongs to the optional variety. ‘He is eating’ can thus be understood either with respect to a contextually provided object (e.g. the mushroom in the ‘Look! He is eating’ example) or via ECBD as saying that the individual referred to by ‘he’ is eating something or other. The Food argument-role can also be bound by an explicit quantifier, as we have seen (‘Whenever his father cooks mushrooms, John eats’). Even the Rumelhart example could be handled by saying, in the manner of Taylor, that all verbs of action carry a ‘manner’ variable that is optional, that is, may or may not be contextually given a specific value when unbound.

For that option to be worth pursuing, we must give it some initial plausibility by showing that there are clear cases of the phenomenon on the articulated side. In other words, we must find context-sensitive expressions which can not only be bound by an operator, but which can also be implicitly bound via ECBD. That is not such an easy thing to do. The third person pronoun ‘he’, which can be bound, cannot be bound implicitly via ECBD. There is no reading of ‘He is bald’ where that means that some male or other is bald. Nor can ‘John is home’ mean that John is at someone or other’s home. (Yet ‘home’ can easily be bound by e.g. a quantifier: ‘Everybody went home’.) Binding by default does not seem to occur with overt context-sensitive expressions. Why, then, should it occur with covert context-sensitive expressions? That is one of the questions which have to be answered by anyone willing to explore the ECBD option.<sup>20</sup>

I will not say more about the ECBD option in this paper. Whatever attraction it has is due mainly to the support it receives from Stanley’s argument. According to the

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<sup>20</sup> As one of the referees pointed out, the ECBD theorist can argue that event variables of the sort posited in Davidsonian analyses *are* bound by default existential closure. (See e.g. Higginbotham 1985.) But event variables themselves are covert variables, hence the fact that they undergo ECBD should cast doubt on them too, in virtue of the argument stated in the text. (See the appendix for an alternative to Davidsonian analyses.)

argument, there cannot be binding without a bindable variable, hence the bindability of an argument-role shows that the contextually provided constituent filling that role is articulated by a free variable in logical form. If one finds Stanley's argument convincing, one is thereby led to accept the package Binding Criterion plus ECBD (since ECBD is the only way to account for the optionality of the relevant constituents consistently with the Binding Criterion). But I do not find Stanley's argument convincing — I think it rests on a fallacy, which I am now going to expose.

### 3.3. THE BINDING FALLACY

In 'Everywhere I go, it rains' a variable is bound by the quantifier 'everywhere I go'. The sentence says that, for every place *l* such that I go to *l*, it rains **in *l***. Stanley concludes that, when 'It rains' is understood with respect to a contextually provided location, that location is articulated after all. The sentence 'It rains' really is the sentence 'It rains in *l*', where the unpronounced location variable can either be bound or be contextually assigned a value. Fully spelled out, Stanley's argument against unarticulated constituents runs as follows:

1. Unarticulated constituent theorists say that in the simple statement 'It rains', the location of rain is unarticulated.
2. In 'Everywhere I go it rains', binding occurs: the location of rain varies with the values introduced by the quantifier 'everywhere I go'.
3. There is no binding without a bindable variable.
4. Therefore, 'It rains' involves a variable for the location of rain.
5. It follows that the unarticulated constituent theorist is mistaken: in the simple statement 'It rains', the location of rain *is* articulated. It is the (contextually assigned) value of a free variable in logical form, which variable can also be bound (as in the complex sentence 'Everywhere I go, it rains').

The argument is fallacious because of a crucial ambiguity at stage 4. When it is said that 'It rains' involves a variable (because binding occurs), which sentence 'It rains' is at issue? One may well accept that in the complex sentence 'Everywhere I go it rains', *the (open) sentence on which the restricted quantifier operates* involves a location

variable which the quantifier binds: ‘For every place  $l$  such that I go to  $l$ , **it rains in  $l$** ’.

That indeed follows from step 3. But in order to reach the conclusion at step 5, we need something stronger: 4 must be understood as claiming that the location variable is also involved *when the sentence ‘It rains’ is uttered in isolation*. Stanley’s argument therefore relies upon an unstated premiss, namely the following:

(SUP) In ‘Everywhere I go it rains’, the sentence on which the quantifier ‘everywhere I go’ operates is the very sentence ‘It rains’ which can also be uttered in isolation (and whose usual interpretation is said by some to involve an unarticulated location constituent).

If we accept (SUP) it follows that the variable which is bound in the complex sentence has got to be present also, unbound, in the simple sentence ‘It rains’. Whoever accepts the analysis of adverbial modification in terms of variadic functions must reject (SUP), however.

According to the variadic analysis, the phrase ‘everywhere I go’ does not merely contribute what binds the variable, it also contributes the variable itself, i.e. the extra argument-role for a location. The phrase ‘everywhere I go’ has a dual role exactly like that of any prepositional phrase. Consider ‘in Paris’. In ‘In Paris it rains’, the prepositional phrase ‘in Paris’ contributes both (a) a variadic function which adds an extra argument-role to the set of argument-roles of the input predicate ‘rain’, and (b) an argument which fills the role. This duality is quite transparent since the prepositional phrase consists of two items: a preposition which determines the type of the extra argument-role, and a name which specifies what fills the role. When the prepositional phrase is an ‘intransitive preposition’ like ‘here’, it is less obvious that it plays two semantic roles, but it does so nonetheless. In ‘It rains here’, the locative adverb ‘here’ contributes a variadic function which increases the valence of the expressed relation, and it also contributes a specific location which fills the extra argument-role. We find the same duality when the phrase is quantificational instead of being singular. In ‘Everywhere I go, it rains’, the phrase ‘everywhere I go’ contributes both the adicity-increasing variadic function *and* the operator which binds the extra argument-role.

From the point of view of the variadic analysis, therefore, the proper representation of ‘Everywhere I go it rains’ is:

[For every place  $l$  such that I go to  $l$ ] (in  $l$  (it rains))

What the quantifier operates on here is the subformula ‘in  $l$  (it rains)’, whose free variable it binds. In that subformula we do find a variable for a location. The simple sentence ‘It rains’ does not correspond to that subformula, however, but to the sub-subformula ‘it rains’, which does *not* contain a free variable for a location. Stanley’s argument goes through only if we conflate two different things: the open sentence on which the quantifier operates, and the simple sentence ‘It rains’ to which the phrase ‘everywhere I go’ has been adjoined. On the variadic analysis, they are clearly distinguished.

#### 4. ‘BOUND’ UNARTICULATED CONSTITUENTS

##### 4.1. THE WEAK BINDING CRITERION

When a circumstance is explicitly provided, by means of an adverbial adjunct, a variadic function operates on the input relation expressed by the nuclear predicate, outputting a complex relation with higher adicity. The same thing happens when a circumstance is contextually provided, except that the variadic function which applies to the input relation remains unarticulated. It is important to realize that (on the present account) what is unarticulated is not merely the argument which fills the new argument-role (say, Location) but the argument-role as well. The unarticulated constituent corresponds to what would be articulated if a prepositional phrase had been uttered. So the proper analysis of ‘it’s raining’, when the location Paris is an unarticulated constituent of the interpretation, is

<In Paris> (it rains)

where the prepositional phrase ‘in Paris’ stands for a locative operator  $CIRC_{location}$ :



*Paris*, and the angle brackets indicate that the operator in question remains unarticulated.

Beside the articulated/unarticulated distinction, there is another important distinction between cases in which the contextually or explicitly provided circumstance is constant and cases in which it is variable and depends upon the values introduced by some quantifier in the sentence. On the articulated side, that is the difference between: ‘In Paris it is raining’ (constant location) and ‘In every city I know it is raining’ (variable location). The latter I represent as

[For every city  $x$  such that I know  $x$ ] (in  $x$  (it rains))

Here, as we saw in the previous section, the quantified prepositional phrase (QPP) contributes both the variadic function ‘in  $x$ ’ which creates an extra argument-role *and* the quantifier ‘for every city  $x$  such that I know  $x$ ’ which binds it.

In this particular example the variable location is articulated by the QPP. Could it be *unarticulated*? That is, is it possible for a circumstance to be both variable and unarticulated at the same time? Stanley claims that it is not. To say that a circumstance filling a certain argument-role varies with the values introduced by some quantifier in the sentence is to say that there is a free variable, representing the argument-role, which is bound by that quantifier. Now if there is a variable in logical form representing the argument-role, then the argument-role is articulated. So the reasoning goes. The natural conclusion is that only constant circumstances can be unarticulated.

The piece of reasoning I have just reconstructed is different from the ‘argument from binding’ discussed (and refuted) in part 3; for that argument was meant to show that there are no unarticulated circumstances at all, whether constant or variable. The argument from binding discussed in part 3 was offered in justification of the Binding Criterion, according to which *bindability* — not actual binding — entails articulatedness:

#### *Binding Criterion*

If an argument-role is *bindable*, that is, if what fills it can be *made* to vary by prefixing

a quantifier to the sentence, then that argument-role is articulated even in the simple sentence (without the quantifier).

Stanley used that criterion in attempting to establish that, in examples like ‘It rains’, the contextually provided location is not a genuine unarticulated constituent, but results from contextually assigning a value to a free variable. (Indeed, the location can be made to vary by prefixing the quantifier ‘everywhere I go’ to the sentence.) That attempt fails, as we have seen; and it fails because the Binding Criterion rests on a fallacy. The construction ‘rain + locative prepositional phrase’ expresses a relation in which there is indeed an empty argument-slot for a location. When the prepositional phrase is quantified, as in ‘Everywhere I go it rains’, the variable representing that empty slot is indeed bound. But in the simple construction, without prepositional phrase, there is neither an empty argument-slot for a location nor a free variable. That is so because the QPP does more than bind the variable; it also contributes the variadic function ‘in *l*’ which maps the relation ‘rain’ to ‘rain\_in\_*l*’. If we disregard the prepositional phrase and abstract from its contribution, we suppress the variadic function and the free variable that goes with it. It follows that bindability does *not* entail articulatedness; only actual binding entails articulatedness. Hence the Binding Criterion must be rejected, and a weaker criterion adopted instead:

*Weak Binding Criterion:*

If an argument-role is *actually bound* by a quantifier in the sentence, that is, if what fills the role depends upon the values introduced by that quantifier, then (in *that* sentence) the argument-role is articulated by a variable which the quantifier binds.

That Criterion establishes that variable circumstances cannot be unarticulated. But it says nothing about constant circumstances — the sort of circumstance that features in standard examples of unarticulated constituent.

Contrary to the Binding Criterion, the Weak Binding Criterion does not rest on a fallacy. Yet it, too, conflicts with the Optionality Criterion. This we can see by looking at some of Stanley’s examples in which, he claims, binding actually occurs. Many of

these examples are such that the circumstance they involve, though variable, has to be classified as unarticulated in virtue of the Optionality Criterion.

#### 4.2. INDIRECT BINDING VIA UNARTICULATED FUNCTIONS

As Stanley points out, we can say

(9) Every time John lights a cigarette, it rains

meaning:

For every time  $t$  at which John lights a cigarette, it rains at  $t$  *at the location in which John lights a cigarette at  $t$*

On this ‘bound’ reading the location of rain varies with the places in which the event of John’s lighting of a cigarette occurs. To capture that reading, as well as the ordinary reading of ‘It rains’ (understood with respect to a contextually provided location), Stanley says we must postulate a variable in logical form, which can be either bound or free. With an unarticulated constituent analysis, he claims, there is no way to account for the bound reading. Is that true? Let us try.

Instead of saying that there is a variable in the logical form of the sentence, which can either be bound (as in 9) or be assigned a contextual value (as in (7)), we can say that in the interpretation of *both* (9) and (7) there is an unarticulated constituent. In (7) the unarticulated constituent is a specific location provided by the context. In (9) the unarticulated constituent is *a function from times (or from events) to locations* — a function which determines a location only with respect to a time (or possibly an event) serving as argument to the function. The difference between the ordinary interpretation of ‘It rains’ in (7) and its interpretation in sentence (9) can be represented as follows:

*Interpretation of ‘It rains’ in (7)*  
<here/in Paris> (it rains)

*Interpretation of ‘It rains’ in (9):*

<in location  $f(t)$  > (it rains)

That the the variable location is unarticulated in (9) can be established by means of the Optionality Criterion. Just as the simple sentence ‘It is raining’ can be interpreted as meaning *It is raining in some place or other*, without any location being contextually provided, the complex sentence (9) can be understood as meaning *Whenever John lights a cigarette, it rains in some place or other*. Neither a specific location nor even a function from times or anything else to locations needs to be provided. When either is provided, it is for pragmatic reasons — in order to make sense of the utterance. Nothing in the sentence itself triggers the contextual provision of either a specific location or a function taking locations as values.

It is surprising that Stanley did not think of this theoretical option, since he himself considers that the variable occurring in the logical form of the sentence ‘It’s raining’ is not simply a locational variable, but a higher-level function variable  $f(x)$  taking a first-order variable as argument. In some contexts, Stanley says, ‘ $x$ ’ will be given a location (say, Paris) as value and ‘ $f$ ’ the identity function as value. Under those contextual assignments, ‘It is raining’ will express the proposition that it is raining in Paris. In a different context, ‘ $x$ ’ will be an event, say today’s concert, and ‘ $f$ ’ a function from events to the places where the events occur. In such a context ‘It rains’ says that it rains at the place of the concert. Since he accepts that a function is contextually provided in such cases and assigned to the higher-level variable, why not consider the possibility that such a function can also be contextually provided *without being triggered by a higher-level function variable in logical form*? Why not indeed? Once this option is considered, it is pretty obvious that it is to be preferred to Stanley’s own view, according to which the contextually provided function is articulated by a higher-level variable. For Stanley’s view cannot account for the optional character of the contextual provision, while the alternative view can.

Note that the function which bridges the gap between the quantifier and the indirectly bound argument-role (the ‘bridging function’, for short) need not be

unarticulated; it can also be articulated:

Every time I sing, it rains at the very place where I happen to sing.

Here there is a prepositional phrase which does not provide a specific location, but a variable location which is a function of the time (or event) of singing. This suggests that ‘Every time I sing, it rains’ can itself be analysed along the following lines:

[For every  $t$  such that I sing at  $t$ ] (at  $t$  (<in  $l$ : I sing in  $l$  at  $t$ > (it rains)))

The description within angle brackets provides a function from times to locations, through which the quantifier over times indirectly binds the location argument-role.

In this framework examples like (9) involve not one, but *two* unarticulated constituents. First, the variadic function which introduces an extra argument-role for a location  $l$  is as unarticulated in this example as it is in ‘It is raining’ when understood with respect to a contextually provided constant location. True, the QPP ‘Every time John lights a cigarette’ explicitly contributes (hence articulates) a variadic function, but it is a different one — one that introduces an argument place for a *temporal* circumstance. There are two variadic functions at work in (9), one locational and the other temporal (‘at  $t$ ’). The temporal one is articulated, the locational one unarticulated. Second, what fills the extra argument-role introduced by the unarticulated variadic function is a variable location determined by another unarticulated function, from times to locations.

So far, so good. But there is a difficulty in store for the unarticulated constituent theorist (i.e. for myself). It is apparent in the formulas I have used to represent the unarticulated constituent. I have written ‘<in location  $f(t)$ >’, where the angle brackets indicate the unarticulated nature of the constituent. Within the angle brackets we find the variable ‘ $t$ ’, which is bound by the quantifier outside the angle brackets. This is necessary to get the desired, bound reading. But how can a bound variable figure within an unarticulated constituent? A variable has got to be articulated. There is no sense in talking of ‘unarticulated variables’, for variables are *linguistic expressions*; they belong

to the language, not to the reality to which the language corresponds. They are not like objects, functions, and the like, which are part of the world and to which semantic conventions map the expressions of the language. Worldly entities can be articulated or not, depending on whether or not they are contributed by linguistic expressions. But for linguistic expressions themselves, there is no possibility of unarticulatedness. This, then, is the real problem which ‘bound’ readings raise for the unarticulated constituent theorist: In order to capture them, it seems that we must posit a bound variable; but doing so is inconsistent with the presumptive unarticulatedness of the constituent.

#### 4.3. ‘WH+EVER’-PHRASES

The problem I have just mentioned arises in all the cases in which a variable circumstance seems to be unarticulated (i.e. when it passes the Optionality test). In section 4.2. we considered examples in which an unarticulated function bridges the gap between the quantifier and the unarticulated argument-role which it indirectly binds. In this section I will consider simpler examples in which no unarticulated bridging function is involved — examples such as:

(8)     Wherever I go, it rains.

Here the phrase ‘wherever I go’ directly quantifies over locations, hence no unarticulated function is needed to bridge the gap between the quantifier and the extra argument-role for a location. Still, I want to maintain, that argument-role is unarticulated in (8). This can be established by means of the Optionality Criterion.

I take it as obvious that, in an appropriate context, we could interpret sentence (8) as saying that

Wherever I go, it rains in some place or other

I leave it as an exercise to the reader to imagine a context in which this interpretation of (8) would be appropriate. What matters is that this interpretation is not forbidden on purely linguistic grounds. In this respect there is a big difference between (8) and

(10) Everywhere I go, it rains

for *that* sentence cannot be interpreted as saying that everywhere I go, it rains in some place or other. That interpretation of sentence (10) is simply not available — indeed we cannot even make sense of it. In (10), the location of rain is *linguistically* determined — it has got to be the place where I go.

At this point it must be noticed that (8) is actually *ambiguous*. Syntactically, (8) can be given two different analyses. On one analysis (8) is more or less equivalent to (10), and it does not tolerate the ‘neutral’ (‘in some place or other’) interpretation. That reading on which (8) is equivalent to (10) can be forced by suppressing ‘ever’:

(8a) Where I go, it rains

This can only be understood as meaning that it rains at the place where I go. On that reading (8) presumably results from a process of extraction with a trace left behind:

[Wherever I go]<sub>i</sub> [it rains t<sub>i</sub>]

The proper semantic analysis of (8), on that reading, is

For every *l* such that I go to *l*, it rains in *l*

But there is another reading of (8) — that which I want to focus on. On that reading the sentence-initial ‘wherever I go’ is base-generated in that position; it does *not* result from a process of extraction. There is no syntactic variable for a location in that case — no trace left by the movement of the wh-phrase (since no movement takes place).

Syntactically, the sentence is to be analysed simply as:

[Wherever I go] [it rains]

Semantically, the proper analysis is

For all  $l$ , if I go to  $l$ , it rains

What characterizes this reading of (8) is that *the location of rain is not linguistically encoded*. As a result, ‘wherever I go, it rains’ (on that reading) *can* be understood as meaning: ‘wherever I go, it rains in some place or other’, in some appropriate context.

Since, on this reading (henceforth the ‘base-generated’ reading), the sentence itself says nothing of the location of rain, it is always possible to add a prepositional phrase contributing that piece of information. Thus we can say:

(8b) Wherever I go, it rains *here/in Paris/in all the alternative places I might have visited instead of that which I eventually chose*

The contribution which the added locative phrase, e.g. ‘here’, makes in (8b) can also result from a process of free enrichment. Just as we can understand ‘It’s raining’ to mean *It’s raining <here>*, we can understand ‘Wherever I go, it rains’ (on the base-generated reading) to mean:

Wherever I go, it rains <here>

In such cases the contextually provided circumstance is unarticulated.

A special case is that in which the base-generated reading of (8) is enriched with an unarticulated location which *coincides with the location mentioned in the ‘wherever’-clause*:

Wherever I go, it rains <there/in the place where I go>

This is certainly the most natural — the most salient — interpretation for sentence (8) on the base-generated reading. The speaker who says ‘wherever I go, it rains’ is likely to mean that it rains in the place where he goes (whatever it is). Truth-conditionally, this is equivalent to the first reading of (8): that in which there is extraction and a trace left behind. We analysed the first reading as



For all  $l$  such that I go to  $l$ , it rains in  $l$

What we have just seen is that *the same truth-conditions can be determined by giving (8) the second, base-generated analysis and adding an unarticulated constituent:*

For all  $l$ , if I go to  $l$ , it rains <there/where I go>

A similar example, a variant of which I mentioned earlier, is

Whatever his father cooks, John eats

which is also syntactically ambiguous. One one reading ‘Whatever his father cooks’ is base-generated in the sentence initial position, and ‘eat’ is intransitive:

[Whatever his father cooks] [John eats]

On the other reading the verb is transitive and there is extraction of the object out of the VP, with a trace left behind:

[Whatever his father cooks]<sub>(i)</sub> [John eats  $t_{(i)}$ ]

When there is no trace, an object filling the Food argument-role can still be contextually provided, but then it is unarticulated. Thus ‘whatever his father cooks, John eats’ (with intransitive ‘eat’) can be understood, *inter alia*, as meaning that he eats *the things cooked by his father*. That interpretation results from a process of free enrichment: an unarticulated variadic function maps the property of eating<sup>1</sup>, expressed by intransitive ‘eat’, on the relation of eating<sup>2</sup> and the extra argument-role thus provided is filled by the values introduced by the quantifier.

In such cases the Optionality Criterion converges with syntactic analysis to suggest that there is an unarticulated constituent in the interpretation of the utterance. Yet, intuitively, binding occurs: the thing eaten covaries with the thing cooked, or the location of the rain covaries with the destination of the travel. To capture that

covariation it seems that we must posit a bound variable within the unarticulated constituent. This raises a problem, as we have seen.

#### 4.4. FREE ENRICHMENT : THE ‘SYNTACTIC’ CONCEPTION

In the two sorts of case I have discussed (those which involve bridging functions, and those which involve base-generated ‘wh+ever’-phrases in sentence-initial position) there is, I think, enough evidence that some constituent in the interpretation of the utterance is unarticulated; yet the unarticulated constituent in question is variable rather than constant — it varies with the values introduced by a quantifier in the sentence. Stanley is right that there is a tension between the two sides of the phenomenon — variability and unarticulatedness — but I don’t think that forces us to give up on unarticulatedness. There are two possible solutions for the unarticulated constituent theorist confronted with the problematic cases.

The first solution consists in *denying* that a bound variable is really involved, in those examples. There are different ways to implement this strategy. One may appeal to a variable-free framework (e.g. Cresswell 1996, Jacobson 1999) and argue that the unarticulated constituent, in the relevant examples, is a healthy model-theoretic object of the sort posited in such frameworks to do the work of variables. Or, in the same spirit but in a standard framework, one may ascribe semantic elements to bound variables as their worldly counterparts, and argue that such elements can stand unarticulated.<sup>21</sup> In an earlier version of this paper I mentioned yet another option, based upon a new approach to unbound anaphora which I hope to pursue elsewhere.

The other solution consists in biting the bullet. Let us concede that ‘bound’ unarticulated constituents involve bound variables and are therefore articulated to some extent. What follows? Not much, I think. Though articulated in a certain sense, such constituents can still said to be unarticulated in *another* sense and to result from ‘free enrichment’.

So far free enrichment has been construed as a mechanism through which some

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<sup>21</sup> Stanley credits Jeff King for emphasizing the second option out to him.

constituent in the truth-conditional interpretation of an utterance is contextually supplied without being articulated in the sentence. This is the ‘semantic’ interpretation of free enrichment. But there is another, ‘syntactic’ interpretation. According to the syntactic conception, what free enrichment yields is not (some aspect of) the truth-conditional interpretation of an utterance, but rather a more elaborate representation which will eventually be given a truth-conditional interpretation.

Let a ‘representation’ be a sequence of symbols in some linguistic/representational medium, and the ‘interpretation’ of a representation be some worldly entity or complex of entities to which the representation corresponds — which it represents. Then, on the semantic conception, free enrichment determines aspects of the *interpretation* of a given representation, aspects which are unarticulated in the sense that nothing in the representation corresponds to them. On the syntactic conception, free enrichment determines aspects of the *representation* which is interpreted: it contributes further symbols, further representational elements, which are unarticulated in the sense that nothing corresponds to them in the natural language sentence that has been uttered. The output of this process of free enrichment in the syntactic sense is a mental representation which articulates what the speaker means by his utterance, *including* those aspects of the speaker’s message that are not articulated in the natural language sentence she uses.

On the syntactic conception, free enrichment is still free: nothing in the natural language sentence triggers that process, which takes place as part of an attempt to make sense of the utterance. But what the process delivers is unarticulated only in the sense that nothing in the natural language sentence encodes that element. It is unarticulated in the sense of not being articulated *in the natural language sentence*. Still the element in question may be ‘linguistic’: it is a constituent in a (mental) *representation*, not a constituent in a state of affairs represented by a representation. Since the unarticulated constituent can be linguistic, it can be a bound variable. On the syntactic conception, therefore, the phrase ‘bound unarticulated constituent’ is no longer an oxymoron requiring the use of scare quotes. Bound variables can be truly unarticulated if free

enrichment is construed syntactically.

On the syntactic conception, the interpretation of an utterance proceeds in three steps. First, the linguistic module delivers a syntactico-semantic representation determined by sentence grammar irrespective of all pragmatic considerations. That is the Logical Form of the sentence. Second, the Logical Form is mapped to a more elaborate representation by various processes, including pragmatic processes such as free enrichment. The resulting representation is what bears truth-conditions. The assignment of truth-conditions to that representation is the third step in the process.

The picture I have just sketched is very widespread (though not among semanticists). Chomsky himself once defended that picture. He wrote:

I will understand LF to incorporate whatever features of sentence structure (1) enter directly into the semantic interpretation of sentences, and (2) are strictly determined by properties of sentence grammar. The extension of this concept remains to be determined. Assume further that there is a system of rules that associates logical form and the product of other cognitive faculties with another system of representation SR (read 'semantic representation'). Representations in SR, which may involve beliefs, expectations and so on, in addition to properties of LF determined by grammatical rule, should suffice to determine role in inference, conditions of appropriate use etc. (Some would argue that LF alone should suffice, but I leave that as an open empirical question.) (Chomsky 1976: 305-306)

It is, as Chomsky points out, reasonable to keep LF and SR distinct in principle, in order not to beg the question at issue, even if one wants to consider the possibility that LF-representations (the outputs of the linguistic 'module') and SR-representations (those which undergo truth-conditional interpretation) are actually identical.

An overwhelming majority of TCP-theorists defend that picture too. That is the case, in particular, of those whom Stanley attacks in his paper: Sperber and Wilson, Carston, Stainton, and Bach. They explicitly say that pragmatic processes map the representations delivered by the linguistic module to the typically richer representations involved in linguistic communication. Stanley offers his arguments against unarticulated constituents in the course of criticizing the views of these researchers, but

if one adopts the above picture, the fact that unarticulated constituents involve bound variables no longer raises a problem.<sup>22</sup> Again, the variables in question will be found in the representations delivered by pragmatic processes as they apply to natural language structures; they will not be found in the natural language structures themselves, hence they will not be articulated in the relevant sense.<sup>23</sup>

On the syntactic conception, the representations which undergo truth-conditional interpretation are not directly the output of the linguistic module, but more elaborate, conceptual representations shaped by pragmatic processes and sensitive to « beliefs, expectations and so on » (Chomsky's words). At some point Stanley criticizes similar views (involving distinct representational layers) put forward by Partee and by Culicover and Jackendoff. According to them it is Discourse Representation Structures (Partee) or Conceptual Structures (Culicover and Jackendoff) that are given truth-conditional interpretations, rather than the syntactic structures of the natural language expressions which are mapped onto them by some preliminary process of interpretation. Criticizing those views, Stanley writes:

This picture of interpretation is *prima facie* difficult to accept. According to it, the interpretative process involves the production of an interpretively superfluous level of representation, namely the output of the syntactic mechanism. We would need a massive amount of empirical and methodological motivation to justify the added complexity such an interpretive process involves over straightforwardly applying a semantic interpretation to the output of our best syntactic theory. (Stanley 2000: 428)

This can be turned into a critique of the syntactic picture of free enrichment, so let me

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<sup>22</sup> See Carston forthcoming for a response to Stanley along those lines.

<sup>23</sup> If we buy this syntactic interpretation of free enrichment for dealing with 'bound' unarticulated constituents, this does not prevent us from appealing to the other form of free enrichment in other cases. Instead of speaking of two 'interpretations' of free enrichment, we should therefore speak of two varieties. Note that it is possible to accept *both* that 'syntactic' unarticulated constituents are supplied in going from the logical form of the sentence to the thought it expresses, *and* that 'semantic' unarticulated constituents are supplied in providing a truth-conditional interpretation for the thought in question.

offer a brief response in closing this article.

First, on the syntactic conception the output of the syntactic mechanism is not superfluous; it is the properly linguistic input to the comprehension process. Second, the empirical and methodological motivation for the multi-representational view can be found in the work of researchers in pragmatics and neighbouring areas of cognitive science. Third, we need not say that semantic (truth-conditional) interpretation applies to conceptual representations *instead of* applying to syntactic representations. If we are persuaded that LF-representations are directly interpretable — a claim which a Contextualist will reject (§1.2.) — we can opt for a hybrid view according to which both LF-representations and SR-representations are subject to truth-conditional interpretation. That is indeed the view defended by advocates of the ‘syncretic view’ (Recanati 2001, section 3). On this view, each utterance has two sets of truth-conditions. First, there are the truth-conditions of the sentence, obtained by submitting the LF-representation to semantic interpretation (in context). Second, there are the truth-conditions of the richer representation resulting from the interplay of linguistic and pragmatic factors. Unarticulated constituents affect only the second set of truth-conditions.

Could we decide that only truth-conditional interpretation in the first sense (that which applies to LF-representations) matters to semantics, and relegate the other sort of truth-conditions to the realm of nonliteral meaning? That is what Bach and many others do, but the price to pay is high; for the truth-conditions thus delivered by directly interpreting the syntactic structures of natural language sentences turn out to be very different from the intuitive truth-conditions of utterances. For example, the truth-conditions of sentence (8) (on the base-generated analysis) will be such that (8) will be true, provided it rains somewhere sometime. This is very far from the intuitive truth-conditions of (8) (in the most salient interpretation, involving a bound unarticulated constituent). Bach is prepared to pay that price but Stanley himself is not, as I pointed out in §1.2. « Accounting for our ordinary judgments about the truth-conditions of various sentences is the central aim of semantics », Stanley and Szabo say.

Accordingly, they find it « worrisome » that on approaches such as Bach's, « one has to abandon ordinary intuitions concerning the truth or falsity of most sentences » (Stanley and Szabo 2000: 240). But that is what happens if, applying semantic interpretation directly to LF-representations, we discount unarticulated constituents.<sup>24</sup>

## Appendix

In footnote 24 I said that adverb-dropping inferences can be accounted for in terms of variadic functions. Here is a brief sketch of how that can be done.

A relation (i.e., a set of interconnected argument roles) will be said to be *loaded* when all its argument-roles have been assigned fillers. A loaded relation can be represented as a set of ordered pairs, each ordered pair consisting of an argument-role and a filler (an argument assigned to that role). Each atomic statement such as 'John kisses Mary' determines a loaded relation, such that the statement is true iff that loaded relation obtains. In the 'John kisses Mary' case the loaded relation determined by the statement features John in the Kisser role and Mary in the Kisee role.

A loaded relation obtains iff there is an event  $e$  such that, in that event, each filler plays the role it has been assigned to and nothing else plays that role. Thus if the loaded relation  $R^+$  is  $\{ \langle R_1, a_1 \rangle, \langle R_2, a_2 \rangle, \dots, \langle R_n, a_n \rangle \}$ ,  $R^+$  holds iff there is an  $e$  such that  $a_1$  uniquely plays the role  $R_1$  in  $e$ ,  $a_2$  uniquely plays the role  $R_2$  in  $e$ , ..., and  $a_n$  uniquely plays the role  $R_n$  in  $e$ . Consider now the standard Davidsonian examples: 'John buttered a piece of toast' and 'John buttered a piece of toast with a knife'. The prepositional phrase 'with a knife' contributes a circumstantial variadic function as well as a filler for the

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<sup>24</sup> I am indebted to Robyn Carston, Eros Corazza, Steven Davis, Larry Horn, John Perry, and Jason Stanley for detailed comments on an earlier version of this paper, and to K. Bach, J. Dokic, P. Jacob, P. Kay, T. Matsui, S. Neale, G. Nunberg, E. Pacherie, P. Schlenker, R. Stainton, D. Sperber, I. Stojanovic and K. Taylor for relevant discussions. Many thanks are due to my students and colleagues at Institut Jean-Nicod (formerly CREA), as well as to the participants in the Pragmatics and Cognitive Science conference in Oxford (sept. 2000) and the Indexicality seminar in Paris (2000-2001), where the paper was discussed. Extensive comments by three referees for this journal were extremely helpful and I am most grateful to them.

extra argument-role. (To keep matters simple, I ignore tense as well as the indefinite nature of ‘a knife’ and ‘a piece of toast’.) Since variadic functions do not change the assignment of fillers to argument-roles, but merely suppress or (as in this case) add an argument-role, the loaded relation determined by ‘John buttered a piece of toast with a knife’ will necessarily include the loaded relation determined by ‘John buttered a piece of toast’. It will, therefore, not be possible for the former to obtain without the latter also obtaining; which means that ‘John buttered a piece of toast with a knife’ entails ‘John buttered a piece of toast’. (Note that this inference pattern goes well beyond adverbial modification; we find it whenever a variadic function operates, whether or not it belongs to the circumstantial variety. Just as ‘John buttered a piece of toast with a knife’ entails ‘John buttered a piece of toast’, ‘John eats an apple’ entails ‘John eats’, and ‘John speaks to Paul’ entails ‘John speaks’. The same mechanism is arguably responsible for the inference from ‘John walks the dog’ to ‘The dog walks’, or from ‘Paula broke the vase’ to ‘The vase broke’.)

In this analysis the truth-conditions of action sentences turn out to be Davidsonian, in the sense that there is quantification over events and adverbial modifiers ultimately contribute extra conjuncts in the scope of the quantifier. But the quantification and the conjuncts are found only in the semantic metalanguage. In the object language there is no extra argument place for events, and adverbial modifiers contribute variadic functions. It is the inclusion relation between the loaded relations contributed by the statements which accounts for the entailment relation between the statements themselves.

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